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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

STEFFON BARBER, an individual,

Plaintiff,

v.

COUNTY OF SAN BERNARDINO, and CHRISTOPHER ALFRED,

Defendants.

Case No. 5:22-cv-00625-KK-DTB

DECLARATION OF ROBERT MORALES, MSME, IN SUPPORT OF PLAINTIFF'S OPPOSITION TO DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

DECLARATION OF ROBERT MORALES

I, Robert Morales, hereby declare as follows:

1. I am a competent adult and personally familiar with the facts contained herein and would and could competently testify thereto if called upon to do so. I make this declaration in support of Plaintiff's opposition to Defendants' motion for summary judgment.

2. I am a mechanical engineer, with a master's degree in mechanical engineering, controlled systems, from California State University, Los Angeles. I have a certification for accident reconstruction from Society of Automotive Engineering. I also have a certification as a video analyst from the Association of Law Enforcement and Video Analyst. I receive continuous education yearly at accident reconstruction conferences. I have training and experience as an accident reconstructionist. I currently work for Young & Associates Engineering Services, where I have been employed as an accident reconstructionist for approximately fourteen years. I have constructed more than one thousand vehicle accidents throughout the course of my career. I have expertise in audio analysis, video analysis, and accident reconstruction. As part of my expertise in audio analysis, I listen to audio to determine the movement of objects and people.

3. My photogrammetry training is reflected in my CV, attached hereto as "Exhibit 1," and I have successfully applied these techniques in hundreds of previous cases involving precise distance and movement analysis. My measurements have been subjected to cross-examination and accepted by courts in California cases. The precision of my measurements reflects the mathematical capabilities of the photogrammetry software combined with the quality of reference data

provided by law enforcement's scene investigation. I have documented all input variables, assumptions, and calculations used to derive the stated measurements, including margins of error inherent in the photogrammetric method.

4. My opinions articulated below are based in part on my training, professional experience and education. I apply my knowledge to make analyses by using a combination of physical evidence, photographs, audio, and/or video, in conjunction with research, engineering, computations, simulations, and calculations. My qualifications to review this case are set forth in detail in my CV, attached hereto as "Exhibit 1."

5. In this case, I reached opinions regarding the vehicle dynamics, vehicle movement, and location and analysis of physical evidence. Before reaching my opinions in this case, I reviewed the following materials: statement of Deputy Alfred; deposition of Deputy Alfred; deposition of Steffon Barber; photographs of the scene and the evidence; measurements of the scene of the incident; police investigation reports relating to the incident; audio belt recording of Deputy Alfred; research regarding the make and model of Mr. Barber's vehicle (2003 Chevrolet Trailblazer SUV); research regarding the make and model of Deputy Alfred's firearm; Google aerial imagery of the scene. In this case, I reviewed consumer reports of Mr. Barber's vehicle to understand its mechanical capacity to estimate its movements. I also conducted a photogrammetry analysis of the scene. In analyzing the audio recording, I used Adobe Audition and After Effects. In analyzing the audio recording, I used specialized software including Audition for precise audio timing analysis, sound isolation, and spectral analysis to

distinguish between tire spinning sounds, vehicle movement, and gunshots, and After Effects for synchronizing audio events with visual timeline analysis. These tools allowed me to create detailed timing sequences measuring intervals in tenths of seconds, isolate distinct audio signatures of tire spinning versus vehicle movement, and correlate audio events with physical evidence to establish the precise chronology of events during the incident.

6. I conducted a comprehensive photogrammetry analysis of the scene using industry-standard techniques and software. This analysis involved: (1) establishing fixed reference points using known measurements from the police investigation; (2) calibrating scale using measured distances between evidence markers and physical structures; (3) correcting for lens distortion and camera angle variations; (4) triangulating vehicle positions using multiple photographic perspectives; (5) cross-referencing measurements against surveyed distances provided by law enforcement; and (6) validating calculations through independent measurement using a three-dimensional laser scan of the incident site obtained during the site inspection. The photogrammetry methodology I employed follows established engineering protocols, ensuring measurement accuracy within acceptable engineering tolerances. All underlying calculations, reference measurements, and validation data are preserved in my case files and available for independent verification.

7. Based on my review of the evidence, it is my opinion that Deputy Alfred had ample time and room to move out of the path of the Trailblazer, as described in detail below. The driveway narrows from north to south: at the north end it measures approximately 15 feet 7

inches in width, while at the south end it is approximately 13 feet 8 inches.

8. Before beginning to travel in reverse, the subject vehicle was parked in a slightly southwest-facing orientation. The vehicle's front end was positioned approximately sixteen feet north of the south end of the driveway, which is bordered by a white wooden fence. The left-front tire was located about 12.5 feet west of the chain-link fence, and the left-rear tire was positioned about 10 feet west of the same fence.

9. The subject vehicle came to rest facing south approximately 27 feet north of the south end of the driveway. The left-front tire was located approximately 8 feet west of the chain-link fence, and the left-rear tire was positioned about 6 feet west of the same fence. Prior to coming to rest, the vehicle traveled a total of 16 feet approximately.

10. The Trailblazer was parked on a low-friction surface consisting of dirt and gravel. The Trailblazer could not have moved as soon as the accelerator was engaged because the rear tires experienced a loss of traction, and the front tires had to overcome static friction. Additionally, based on the sound of the tires spinning, Mr. Barber may have been pressing the gas pedal and brake pedal simultaneously. My analysis of the surface conditions reveals a mixed composition driving surface that significantly impacted vehicle traction capabilities. Based on photographic evidence and witness descriptions, the driveway consisted of loose topsoil over a harder-packed dirt base, with scattered gravel and rock formations creating an uneven, low-friction surface. Using standard engineering coefficients for such mixed surfaces, I calculated the coefficient of friction to be approximately 0.4 to 0.5, substantially lower than the 0.7 to 0.9 coefficient typically found on

paved surfaces. This low-friction environment explains why the 5,000-pound Chevrolet Trailblazer experienced immediate rear wheel slippage upon acceleration attempt, requiring the tires to spin for approximately 0.75 seconds before gaining sufficient traction to initiate vehicle movement. The surface composition created a mechanical limitation that prevented rapid acceleration and restricted maximum achievable speeds, regardless of accelerator input.

11. Based on my review of the digital and physical evidence analyzed, the Trailblazer was either not in motion when Deputy Alfred started firing his shots or was moving at a slow speed of under 1 mile per hour. At the time of the first shot, the Trailblazer had moved backwards less than one foot. At the time of the second shot, the vehicle still had not traveled backwards more than one foot. At the time of the last shot, the vehicle had started decelerating and was moving at approximately under 1 mile per hour before coming to rest.

12. Based on my analysis of vehicle dynamics and timing, the evidence is consistent with Mr. Barber releasing his foot from the brake in reaction to the gunshots. This conclusion is supported by the correlation between the audio timeline of the shots fired and the subsequent vehicle movement patterns I observed in the physical evidence. Based on my analysis of the deputy's positioning relative to the vehicle's trajectory and my assessment of the vehicle's slow speed (maximum 3.4 mph), Deputy Alfred had sufficient time and available space to move laterally out of the vehicle's path. My analysis of the audio, combined with physical evidence, indicates that Deputy Alfred was likely in motion and moving toward the Trailblazer during the shooting sequence, which

is inconsistent with the scenario in which the deputy was trapped or otherwise incapable to move to safety.

13. When Mr. Barber's vehicle rolled backwards, it moved in a straight line. The resting position of the vehicle after the incident shows that the wheels are straight, meaning that Mr. Barber never changed the direction of the vehicle.

14. The significance of the vehicle's maximum speed of 3.4 miles per hour becomes apparent when compared to normal human locomotion speeds. Based on standard biomechanical data, the average human walking speed ranges from 3.0 to 3.5 miles per hour, meaning the vehicle's maximum speed was equivalent to or slightly faster than a person walking at normal pace. This comparison is technically relevant because it demonstrates that any individual in the vehicle's path would have had ample opportunity to move out of the way, given that the vehicle was not traveling faster than a human could walk.

15. The vehicle decelerated and came to a stop because Mr. Barber reapplied the brakes at some point after being shot. The evidence indicates that Mr. Barber applied the brakes mildly, as opposed to slamming on the brakes. No tire screeches can be heard in the provided audio. The vehicle gradually decelerated after the brakes were pressed while remaining in reverse gear.

16. The spatial distribution of the shell casings provides critical forensic evidence of Deputy Alfred's positioning and movement during the shooting sequence. Shell casings ejected from a Glock 21 typically follow predictable ballistic patterns, ejecting to the right and slightly rearward of the shooter's position. The clustered pattern of four shell casings at placards #2 to #5, followed by two additional casings at

placards #7 and #8, creates a linear progression that is consistent with forward movement during firing rather than stationary shooting. The 15-feet differential between the first shell casing location (approximately 51 feet with respect to the rear end of the vehicle rear's initial position) and the final casing location (approximately 21 feet with respect to the rear end of the vehicle's final position) demonstrates Deputy Alfred's forward advancement of approximately 15-ft during the shooting sequence. This ballistic evidence corroborates the audio analysis findings that Deputy Alfred was likely in motion and advancing toward the Trailblazer while discharging his weapon, contradicting any assertion that he remained in a fixed, defensive position throughout the encounter. The technical significance of this shell casing trajectory analysis is that it provides objective physical evidence of the deputy's movement pattern independent of testimonial accounts, establishing through forensic science that Deputy Alfred was likely pursuing rather than retreating during the critical moments of the shooting. The ballistic trajectory evidence documented in the Scientific Investigations Division laboratory report further corroborates Deputy Alfred's forward advancement during the shooting sequence. The trajectory analysis shows a progression from shots "consistent with the shooter being located rear of the vehicle" (Observations 1-1B, 2-2C, 3-3D, 4-4D) to a shot "consistent with the shooter being located rear of the forward side of the vehicle" (Observation 5-5A). This change in shooting angle, combined with the 15-foot shell casing progression, provides multiple independent sources of objective ballistic evidence establishing Deputy Alfred's movement toward the vehicle rather than remaining stationary.

17. The spatial arrangement of the bullet casings demonstrates two distinct clusters. Casings labeled with placard #2 to #5 form a cohesive group, with a linear separation among them of approximately 5 feet. A clear gap of approximately 7 feet exists between casing #5 and casing #7, indicating a pause or shift in shooting location. Finally, casings #7 and #8 sit in close proximity, approximately 2 feet apart, forming the second distinct cluster.

18. Furthermore, the 7-foot spatial separation between the two bullet-casing clusters indicates a more substantial pause between shots occurred between placards #5 and #7. That observation aligns with the audio analysis of the deputy belt recording, which records a longer interval of approximately 0.5 seconds between shots 4 and 5.

19. Based on my analysis of the audio belt recording, the acoustic evidence indicates that Deputy Alfred was in motion and advancing toward the Trailblazer during the shooting sequence. My audio analysis reveals movement patterns and positioning changes consistent with forward locomotion at a pace faster than normal walking speed, based on the audio signatures and timing intervals captured in the recording.

20. Based on my analysis of the tire impression evidence and scene documentation, the photographs indicate the final resting position of the Trailblazer following the incident. The physical evidence and investigative records indicate that when Mr. Barber was extracted from the vehicle, the brake pedal was in a depressed position. Upon removal of Mr. Barber from the vehicle, the Trailblazer moved in a rearward direction for an additional distance of approximately two to three feet. This movement is consistent with the vehicle transmission remaining in reverse gear and the removal of brake pressure, allowing the vehicle's

engine power to propel it rearward at idle acceleration until mechanical intervention stopped the movement.

I declare under penalty of perjury that the foregoing is true and correct, and that this was executed this 23 day of October 2025 at Los Angeles, California.

Robert Morales